REMARKS

Applicant respectfully requests reconsideration of the application in view of the foregoing amendments and following remarks. Applicant expresses appreciation for the allowance of claims 44, 89, and 111, and for the indication of allowability of claim 52.

Claims 9-43, 45, 56-88, 90-109, and 112 are withdrawn from consideration. Claims 44, 89, and 111 are allowed and claim 52 is objected to. Claims 1-8, 46-51, 53-55, and 110 are rejected. Claims 1-5, 8, 44, 46, 47, 49-55, 89, 91, and 111 have been amended. New claims 113-115 have been added. Claims 13, 14, 15, 23, 25-31, 60, 61, 62, 70, 72-76, 97, 101, and 103 have been canceled. Thus, claims 1-12, 16-22, 24, 32-59, 63-69, 71, 77-96, 98-100, 102, and 104-115 remain pending in the present application.

Restriction Requirement

As an initial point, Applicant notes that the Office Action indicates claim 91 is withdrawn and claim 110 is being considered. It appears that this is a typographical error, and the following response treats claim 110 as being withdrawn and claim 91 as being considered.

In a restriction requirement dated May 18, 2005, the Examiner required Applicant to elect between four groups of claims, and Applicant chose Group I. The restriction requirement also stated,

> In the event Applicant chooses Group I, there are the following species: Applicant must first elect between a two or three microphone embodiment. In the case of a two microphone embodiment election, Applicant must then elect between the embodiments of one forward filter and two forward filters. In the case of one forward filter embodiment, Applicant must then elect between a forward filter gain controller and look-up table containing a predetermined gain as a mechanism for filtering the input signals. In the event Applicant chooses to elect the forward filter gain controller embodiment, Applicant must elect

> between embodiments which have a wave parameter estimator which disregards the amplitude information of the input signals or not. In this case, Applicant chooses to elect the wave parameter estimator that does not disregard the amplitude information, Applicant must elect an equation solving method in the wave parameter estimator from direct solving, iteration, parameter scan, solution screening/optimizing for minimal power technique, look-up table containing pre-computed solutions. In addition, Applicant must elect a forward filter which either compares the parameter estimate to a predetermined threshold, uses a wave direction parameter estimate, or uses a wave damping parameter estimate.

(Pages 3-4). In subsequent responses, Applicant elected the two microphone embodiments, one forward filter, the forward filter gain controller, and the wave parameter estimator that disregards amplitude. Applicant also elected the direct solving method and the forward filter that uses a wave direction parameter estimate.

It is unclear why claims 16, 17, 19, 20, 24, 33, 35, 37-43, 63-66, 71, 78, 80, 82-88, 98, 102, 105, and 107 are withdrawn from consideration. These claims are part of Group I and appear to be directed to the elected species. For example, claims 16-20, 63-67, and 98 are directed to the two microphone embodiment, have one forward filter, and have a forward filter gain controller that uses a wave direction parameter estimate in calculating the first gain. Thus, claims 16, 17, 19, 20, 63-66, and 98 appear to be directed to elected species. Similar arguments apply to claims 24, 33, 35, 37-43, 71, 78, 80, 82-88, 102, 105, and 107. Thus, since claims 16, 17, 19, 20, 24, 33, 35, 37-43, 63-66, 71, 78, 80, 82-88, 98, 102, 105, and 107 are drawn to elected species, Applicants submit that they should be substantially examined and considered.

Claim Rejections Under 35 U.S.C. §102

Applicant respectfully submits that the Examiner has failed to establish a prima facie rejection, and more particularly that the pertinence of the cited references relied upon by the Examiner have not been clearly explained as required by 37 C.F.R. § 1.104(c)(2). The rejections under 35 U.S.C. §102 attempt to compare elements from drawings in the cited references to features of the claims. The rejections do not, however, provide any explanation of how these drawing elements relate to claim features and do not indicate where the specifications of the cited references might provide additional clarification. Nevertheless, Applicant has made every effort to fully respond to the rejections recited in the Office Action.

Rejections of Claims 1-6, 8, 46-50, 53, 55 and 91 under Krasny

Claims 1-6, 8, 46-50, 53, 55 and 91 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,738,481 to Krasny et al. ("Krasny"). Applicant respectfully traverses this rejection.

Krasny does not teach or suggest various features recited in claim 1. The Office Action states, "Krasny et al. teach a noise reduction apparatus and method comprising a plurality of microphones 104, 106, 108, wave parameter estimator 125, and forward filter gain controller 145. Krasny et al. also teach FFT units 115 for performing differentiation with respect to time. There is a second analysis filter 120 connected to a second microphone." (Page 2.) The elements of Krasny specified by the Examiner are shown in Fig. 1 of Krasny, which his reproduced below.

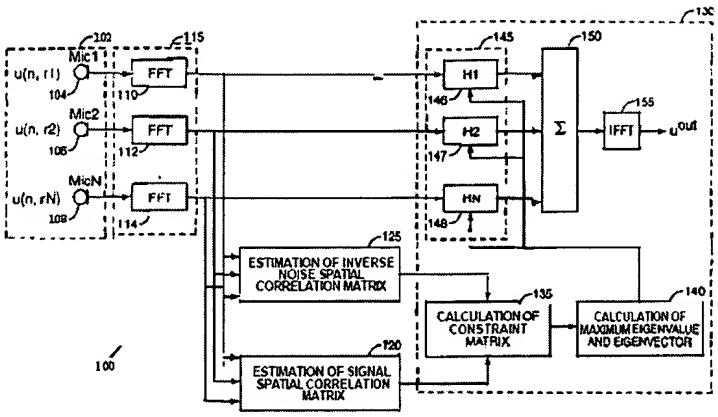

FIG. 1

The elements of Krasny cited in the Office Action do not teach or suggest the elements recited in claim 1. For example, correlation matrix estimator 125 is not comparable to a wave parameter estimator. According to Krasny, "the inverse noise spatial correlation matrix estimator 125 provides an estimate of the inverse noise correlation matrix using the working signal." (Col. 3, l. 49-52). In contrast, the wave parameter estimator is configured to "analyze the filtered electrical signal and the plurality of electrical signals in first and second frequency sub-bands to provide first and second estimates of a parameter of the wave, the first estimate being associated with the first frequency sub-band and the second estimate being associated with the second frequency sub-band." Nothing in Krasny teaches or suggests that correlation matrix estimator 125 is capable of performing frequency sub-band analysis. Thus, the wave parameter estimator of claim 1 distinguishes over correlation matrix estimator 125 of Krasny.

Furthermore, the analysis filter of claim 1 is not comparable to correlation matrix estimator 120 of Krasny. Correlation matrix estimator 120 outputs an estimate of a signal spatial correlation matrix, and the output appears to be used as a parameter in constraint matrix

calculator 135. In contrast, the first analysis filter is "configured to filter a first electrical signal . . . to provide a filtered electrical signal." Nothing in Krasny teaches or suggests that estimating a signal spatial correlation matrix is comparable to filtering an electrical signal. Furthermore, matrix estimator 120 outputs a matrix to constraint matrix calculator 155, but does not appear to provide a filtered electrical signal to a wave parameter estimator. Thus, matrix estimator 120 cannot satisfy the first analysis filter limitation in claim 1.

For at least the foregoing reasons, Krasny fails to anticipate claim 1. These arguments apply with equal force to claims 46 and 91. Thus, independent claims 1, 46, and 91, as well as claims 2-7 and 47-54, which depend from claims 1 and 46, are allowable over Krasny.

Claim 8 also distinguishes over Krasny for many of the same reasons that claim 1 distinguishes over Krasny. For example, claim 8 recites a wave parameter estimator "configured to analyze the plurality of electrical signals in first and second frequency sub-bands to provide first and second estimates of a parameter of a wave." As previously noted, Krasny does not teach such a wave parameter estimator. Claim 8 further distinguishes over Krasny by reciting that the wave parameter estimator comprises "an equation solver configured to perform a direct solving technique." There is nothing in Krasny that shows, teaches, or suggests an equation solver configured to perform a direct solving technique. Thus, Krasny does not anticipate claim 8.

Rejections of Claims 1, 7, 46 and 54 under Elko

Claims 1, 7, 46 and 54 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,586,191 to Elko et al. ("Elko"). Applicant respectfully traverses this rejection.

Elko fails to teach various features recited in claim 1. The Examiner states, "Elko discloses an apparatus comprising microphones 1A, 1B, wave parameter estimator 6, and filter 5." (Page 3). This cursory rejection does not address many of the features recited in claim 1. For example, the rejection fails to indicate which feature of Elko teaches or suggests the first analysis filter limitation of claim 1. The reason is because Elko does not disclose or suggest a first analysis filter.

Furthermore, the controller disclosed in Elko does not anticipate the wave parameter estimator of claim 1. According to Elko, "the controller 6 receives from the differential microphone 1, output 4, which is used to determine the operating distance between the differential microphone 1 and the source of the sound, S." (Col. 3, l. 44-47). While Elko's controller determines the distance between microphones and a sound source, the controller is not a wave parameter estimator "configured to analyze the filtered electrical signal and the plurality of electrical signals in first and second frequency sub-bands to provide first and second estimates of a parameter of the wave," as recited in claim 1. Indeed, Elko does not appear to teach generating parameters associated with different frequency bands in any context.

Therefore, claim 1 clearly distinguishes over Elko. Applicants submit that these arguments apply with equal force to claim 46. Accordingly, independent claims 1 and 46, as well as claims 7 and 54, which depend from claims 1 and 46, clearly distinguish over Elko.

Rejections of Claims 46 and 51 under Choi

Claims 46 and 51 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,978,490 to Choi et al. ("Choi"). Applicant respectfully traverse this rejection.

Choi does not show or suggest the features recited in claim 46. The Office Action states, "Choi discloses a microphone directivity apparatus comprising a plurality of microphones, parameter estimator 53, and gain controllers 54 and 55, the parameter estimator 53 estimates a direction of sound." (Page 3). Applicant cannot understand why comparative controlling part 53 is being compared to a wave parameter estimator. Choi's comparative controlling part 53 does not estimate parameters by analyzing sub-band signals, as recited in claim 46. Thus, Choi's controlling part does not anticipate the estimating steps of claim 46. Accordingly, independent claim 46, as well as claim 51, which depends from claim 46, clearly distinguish over Choi.

In view of the foregoing, Applicant requests withdrawal of the rejections based on 35 U.S.C. §102(b). Applicant respectfully requests that the claims pending in the application be allowed.

Applicant submits that each of the presently pending claims in this application is in immediate condition for allowance. Accordingly, Applicant respectfully requests the Examiner issue a favorable action on the merits. If the Examiner has any comments or suggestions that

could place this application in even better form, Applicant invites the Examiner to telephone the undersigned attorney.

Respectfully submitted,

Dated: 24 OCTOBER 2006

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